

## **Future of Agriculture: Building Markets Here & Abroad**

### **Plenary Panel USDA 2014 Agricultural Outlook Forum**

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**DEPUTY SECRETARY KRYSTA HARDEN:** Thank you, Dr. Glauber. We're going to go right away to our first panel, "The Future of Agriculture: Building Markets Here and Abroad." Secretary Vilsack is going to moderate, but I'm going to ask our panelists to join as I introduce you. And we're going to start with Cathy Burns who is the president of the Produce Marketing Association, a 30-year veteran of supermarket industry, including senior-level positions with Hannaford Brothers and Food Lion. Welcome. MS. Burns.

**MS. CATHY BURNS:** Thank you. **MS. HARDEN:** Kelly James is next, founder and CEO of Mercaris, a data service and trading platform organic, non-GMO, and other identity preserved agriculture commodities. Paul Schickler, President of DuPont Pioneer, the advanced seed genetics business of Pioneer. Mr. Schickler has been with Pioneer since 1974. And Dr. Raj Shah, Administrator of U.S. Agency for International Development, and the former chief scientist and undersecretary for research, education, and economics at USDA. Our moderator is Secretary Vilsack.

**SECRETARY VILSACK:** I'd like to add my welcome to all who are attending today, and my thanks as well to Joe, Jerry, and to the Deputy and the planning team for putting this Outlook Forum together. I want to take a second to acknowledge the good work of the Deputy in particular, focusing on young farmers and women farmers. I think that later in the session, when I talk about the census, you'll see why that work is going to be extraordinarily important. We thank her for focusing the attention on that issue. And I also want to take this opportunity to thank Joe Glauber. I think sometimes we have a tendency to take Joe for granted. He's been our Chief Economist for so long. But Raj just commented to me and Joe, as we were walking up here, what a terrific job you do in explaining the outlook in a way that folks can understand. I really appreciate it, and think Joe deserves another round of applause for his work.

I want to thank the panel for doing this. This is a great opportunity for us to have a conversation with all of you. So this will be divided into three parts. To begin, we're going to give each panelist a chance to say a few words to you directly, then I'll have a few questions, and then we'll open it up to audience participation.

Cathy, Let's start with you then we'll just move down the line.

**MS. CATHY BURNS:** Good morning. I come to you from the supermarket industry. As the Deputy mentioned, I spent 30 years in the industry. I started as a bagger and worked my way through the system and ended up, most recently, as the president of Food Lion, which has 1,300 stores, 75,000 associates, and 11 distribution centers. I've transitioned and am now President of the Produce Marketing Association. For those of you who may not know what the Produce Marketing Association is, we are a global organization. We have members across 50 countries, and we cover the whole supply chain, from the seed all the way, obviously, through the farm, the grower/shippers, retailers, food service, and obviously have some great partnerships with

the government, specifically with the USDA. Our intention is to convene those groups across the supply chain to move the industry forward. When I think about things that are really important to us right now, it's about demand creation and creating the demand for food, as opposed to demand fulfillment. We know we need to do both, but we believe there's a huge opportunity for fruits and vegetables, and specifically, to be more involved in the market around creating demand.

The other thing that is important to us is taking away the barriers to produce the food. So, the opportunity to be more efficient and to leverage science and technology in a way that we can help the industry remove some of those barriers to ultimately increase consumption.

The third thing that's on our minds is the war for industry talent. If there's an opportunity, and we know we have an opportunity to continue to inspire young people to come into this industry, we know it's difficult. The supermarket industry is challenged to attract talent, and the opportunity we have through PMA's Foundation to build bridges across this great industry is to make a real difference. So I come to you from 30 years in the supermarket industry. I look forward to taking some of that expertise and sharing it. And, honestly, as a mother of two girls, I want to leave this world a better place than what they entered. I believe this industry has the soul and the drive to do it, so I look forward to spending time with you.

**SECRETARY VILSACK:** Thanks. Kellee?

**MS. KELLEY JAMES:** Good morning. I want to thank the Secretary and also the Chief Economist for the invitation to speak here today. I've attended this event in the past, in the audience, and it's always a great experience. I'll focus my remarks on a couple of points that I'm sure the panel will all cover; that is new market opportunities, and the call for entrepreneurship towards the end. I co-founded a company called Mercaris a little over a year ago, and we provide market data and electronic trading for identify preserved ag commodities, specifically organic and non-GMO. As you know, the IP markets are definitely a niche, but they're a profitable niche, and they're growing. Last year there were \$35 billion in sales just in the U.S. It's been growing since USDA promulgated regulations almost 15 years ago for the National Organic Program. The key thing to know from my perspective is how organics have grown on the sheer strength of consumer demand. There has been little support through subsidies or research dollars. But consumers have responded so positively to this type of food and fiber that the market has continued to grow.

One thing you'll note is that "non-GMO" has actually been around for a while. It's been an export-dominated market, but the numbers are a little harder to come by there because we don't have the fundamental data that tracks it annually. What I'd like to share is the opportunities, particularly for the American grower, that have been somewhat masked by an opaque market.

Consider the Chief Economist's remarks made this morning --- you can see we've started tracking cash market for organics, so you can look at organic corn. In the last three months, cash market price for organic corn has been just over \$12 a bushel. So you compare that to \$4.50 a bushel estimated March delivery. That's a very healthy margin. On the non-GMO side, you see 50 cents a bushel basis. Again, that's much smaller than the organic premium,

but if you're skating on the edge of profitability on your farm, you know, 50 cents is worth considering. For organic soybeans, you are looking \$26 a bushel. For the general use non-GMO soybean, it's \$1.75 basis for food, and somewhere in the range 95 cents of bushel basis for feed. Finally, for a hard red winter wheat, the organic price over the last three months was about \$15.78 compare to a winter wheat price of \$6.50 a bushel. This is important information to communicate to our grower --- there is opportunity here. A second thing to consider is that there's room for U.S. organic production to grow. So, again, due to consumer demand, some of the entry barriers are fairly high, yet we've started importing quite a lot of these crops from overseas. We are currently importing about 10% of our organic wheat, about 25% of our organic corn, and about half of our organic soybeans.

And now a final note regarding the macro statistics on non-GMO identity preserved (IP) crops, which to this point are destined primarily to the export market. The Japanese consumer buys a lot of our non-GMO soybeans. However, with the consumer demand, we've seen a growing domestic market. A lot of the processing capacity coming online, whether it's mills or elevators that are being built to handle the growing domestic demand, is begin created for these crops. You see activity at the state levels with labeling initiatives. Even when we don't have the strength of a Federal program for non-GMO standards, you have private sector entities that are moving into this space and creating their own standards, which, by the way, might end up being presenting a difficulty if we end up with multiple standards for non-GMO products. For instance, we have everyone from Whole Foods Market to General Mills to Post developing products that can carry a non-GMO label. This is a little slice, or a snapshot of the landscape for identify-preserved crops.

I'll close by saying that the company we founded didn't exist a year-and-a-half ago. I can't emphasize strongly enough, especially to the young folks getting into this sector now, that entrepreneurship has a way of tapping into innovation. It's no longer the case where you have to have 30 years of experience and a huge capital to create something valuable in the ag sector. With the rise of big data, of precision data that has improved farm productivity, and farm management software --- all of these things require a background in technology, but in many cases they don't require huge amounts of capital. I am excited by the chance to emphasize entrepreneurship, and am happy to talk more about this.

**SECRETARY VILSACK:** Excellent. And Paul?

**MR. PAUL SCHICKLER:** Good morning, Mr. Secretary. Thanks for convening the panel, and also for the invitation for Dupont Pioneer to be part of it. I am pleased to be here. You know, as we think about the future, not only in the remarks that we've already enjoyed today, but just as we look at the future, certainly we've got challenges, and the challenges are numerous. We've got challenges to meet the demands of the world. We have demands to produce an adequate amount of food and to do it so that it has increasing nutritional value. That's a clear demand. Secondly, we've got to do that sustainably. And then thirdly, there's a tremendous demand, which has already been alluded to, for information; whether it's by the farmer or information that the consumer wants. So when you look at the challenges that we have, it's clear that the demands are for quantity and quality; while sustainability and information are right there in front of us. What I'm thrilled about is that all of us in the room

are part of meeting these challenges. This is what Dupont Pioneer is all about. I'd like to take a moment to talk about how we are addressing each of those challenges around nutrition, around sustainability, and around information.

First of all, as it relates to nutrition, today, in fact, we announced a tremendous achievement. We've been working on African biofortified sorghum for a number of years. It started, really, with tremendous collaboration, first with the Bill and Melinda Gates Foundation, later with the Howard Buffett Foundation, and now with a number of organizations in Sub-Saharan Africa.

What we announced today is not only the increased availability of vitamin A but also the stability of that vitamin A in sorghum, mainly about a 100% increase in stability. What that means for an African farmer is that they could harvest that sorghum crop and save it without losing the vitamin A content for up to about three months. This also comes with increased levels of protein, iron, and zinc, so this is a tremendous achievement. What we're doing there is basically delivering the opportunity for increased nutrition to children throughout Sub-Saharan Africa, so I'm excited about that.

Secondly, we are improving rural livelihood. For example, in Indonesia on the Island of Madura, which is off the coast of Java, and a less developed part of Indonesia, we've gone in to partnership with the Minister of Agriculture for Indonesia. We looked at the community, offered improved seed varieties, offered education that allows growers to improve their agronomic practices, and then put together a whole system --- all the way from improved irrigation capability, improved shelling equipment, and improved silage practices. All of this is to provide sustainability to the local community as they improve their agricultural productivity. Just last month, the president of Indonesia came to our site on Madura and recognized the achievement that it's brought to rural development there. We're now in the process of extending that project across other areas of Indonesia, again, in partnership with the local communities, as well as with the Minister of Agriculture.

My third example refers back to the information subject that we've already talked about today; whether it's for growers or consumers, people are anxious for additional information. As part of Dupont Pioneer's business, we've always provided service, information, and support to your customers so that they can use our products to the fullest benefit. As we move into the electronic age and bring all the young talent into these great opportunities, we're really trying to take advantage of all the information that is available, both that we collect and that is publicly available, then we try to improve productivity for U.S. farmers, as well as, eventually, growers throughout the world. This is all about partnership. We've put this activity together, in combination with John Deere.

We also have an agreement with the DTM organization to bring weather and market information forward. Just this week, we announced a collaboration with USDA and the University of Missouri for soil mapping techniques to bring an array of information together for the whole set of partnerships, that aim to improve the productivity of U.S. growers and growers throughout the world. We are focused on these challenges, which all of us in the room seek, improving the quality and quantity of food, improving rural livelihood, and doing it all sustainably. I'm excited about the future. I'm excited that all of us here are really after the same

objectives, and I think back to Joe's remarks this morning, that even though we're going through some challenging times, and coming off of some levels that were pretty favorable for agriculture, when you look to the future, the opportunity is pretty bright.

**SECRETARY VILSACK:** Raj?

**DR. RAJ SHAH:** Thank you, Secretary Vilsack, and to the whole USDA team for pulling this extraordinary event together. I'll just share one thought for everyone in this room, which is that over the next 20 to 30 years, two to three billion people around the world will move from about \$2 a day in income to \$10 a day or more in income, and as that transition occurs, we know with certainty that people will basically demand two things first. The first, and most important, is a better diet, and that means animal protein, higher value consumption, and better nutrition across the board.

The second is a Smartphone. I tend to think about it as the Smartphones that get all the attention but we're really serious about attacking issues like climate change, improving large-scale human malnutrition, especially amongst children, making big reductions in the 840 million people that will still go to bed hungry tonight, and protecting communities that live on the edge of vulnerability from erratic climate events and poor rainfall.

Actually, it's the dietary diversity and the agricultural consequences that might very well be the more important long-term trends. So I think the future is very bright. I think American farmers, producers, businesses, and seed companies that have a tremendous amount of technology and knowhow as well as systems-development experience to apply that to the global challenges. The only thing that's extraordinary to me is that this doesn't get more attention, because it really is such a profound trend and such a unique opportunity for creating both American economic value and tackling some of the most profound challenges we face around the world.

**SECRETARY VILSACK:** Okay, so with those opening remarks, I hope that no one from my staff provided you with questions that might be asked so that you're prepared for this. Because if they did, just forget them, because that's not going to happen. This is partially about trends. What I'd like Paul and Cathy to talk about for just a few minutes is, imagine this group five years from now. Joe's already given his presentation, and frankly, folks, it would be very similar to what you just heard. You're back five years from now, what are we seeing in that five-year period from today? And, Kellee and Raj, your challenge is to go a little bit further down the road. I'd like you to talk about what you see 10 to 20 years from now in terms of trends.

**MS. BURNS:** So I'll start with demand creation. I think there is a huge opportunity for our industry -- I'm speaking to the produce industry -- to create -- to take some playbook from the consumer package goods company and how they market, and transfer that to marketing, especially to small children and their millennial families. On average, a child sees about 5,500 advertisements a year for junk food. For healthy food it's less than a hundred. We have an opportunity over the next five years --- and I'd love to make it even shorter -- to be able to market to children --- that's the age group that we need to target. I mean we're almost a lost

cause in terms of our eating habits. But if you think about this next generation, and hopefully the students too, they have a choice, and marketing works.

We have entered a pretty exciting partnership with the Partnership for a Healthy America, the White House, Sesame Street, and PMA to provide the industry with tools and the framework to do just that. Sesame has given the rights to the Produce Marketing Association to sublicense their assets royalty free, to farmers, to growers, to retailers, to market products with, yes, Elmo and Big Bird and all of those favorites that we grew up with, on fruits and vegetables. To inspire young kids as they're walking into a produce department of a store saying, "Hey, mom, I want apples" or, "I want mushrooms" or, "I want cauliflower," and ultimately have that millennial family have a different association with that product than they do today. So that's really exciting.

The other really important thing is that consumers want a relationship with their produce provider. So whether it's knowing who the farmer is by going to a local farmer's market, or through a QR code and understanding who grows their product from where, or by talking to a produce clerk in a supermarket. We have such a great opportunity for differentiation in the produce industry, because there's a relationship there that the consumer wants to have with the product, with the farmer, with the information, to ultimately make their buying choices easier and inspiring and feed their family a more healthy, nutritious meal. I see the landscape looking very different over the next five years, especially as it relates to marketing, not just on air, but social marketing with those iPhones, that inspire people to eat more fruits and vegetables and dairy consumption.

**SECRETARY VILSACK:** All right, Paul, your five years?

**MR. SCHICKLER:** I wish I could project the next six months, but I'll give a short at five years. Again, as we come off of the years that we've enjoyed over the last three year, I think what that's going to do, as we come off of those highs into more normalized prices, it's going to restore demand. I think we're going to see more demand for livestock production and all the things that go with that. Our ethanol producers and even biomaterials from agricultural sources will be more competitive economically, and global trade will also improve at a more normalized level of prices. So that's the first thing that I think will happen. We will restore some of the demand that has been eliminated through the high prices over the last three or four years.

The second thing, referring to Raj's point, over the next five -- or I'll take it a little farther -- seven years, we're going to see about 1.4 billion people move from that lower class into the middle class, and for the most part, that's in African nations. As that population moves into the middle class, they're going to demand, meat, milk, and eggs. That's great for agriculture in the United States and around the world.

Thirdly, I'm going to come back to what we already talked about. I'm going to use Raj's Smartphones and deliver information to growers and consumers around the world to improve their information sources on the consumer side, and the ability to produce on the farmer side, and we're going to do with the young people that we're going to bring into agriculture.

**DR. SHAH:** So I guess on the ten-year horizon.

**SECRETARY VILSACK:** Ten, fifteen.

**DR. SHAH:** Ten, fifteen-year horizon ... there's a few trends I would highlight, one with a lot of confidence, and the other two that I think are up to us to figure out how to find the right answer. The one that I have a tremendous amount of confidence about is the integration of the African food production system into the global economy. I think, without question, what we saw in Joe's charts regarding how China has grown and become more integrated, I think we will see that trend happen. We're seeing it happen already. Paul could describe some of the things Dupont is doing, but I think that is a definitive trend that will bring an billion extra people into the global integrated food economy in a more modern and commercial manner.

The second trend is open to the decisions we make together. If we embrace resilience, investments in the kind of agricultural science that can help protect against climate vulnerability, there are about two-and-a-half-billion people today that are producers, either on farms or herders, ranchers, et cetera, fisheries, that are all dependent on or vulnerable to the evolution of climate over the next few decades. If we have a large-scale investment in science, technology, and policies that protect the resilience of those producers, you could have a very good outcome over that long trend. If we don't, I think that's going to put downward pressure on food production at a time when it's needed the most.

For the last trend, I'd come back to Cathy's comments on nutrition. We have a unique opportunity to take the science and our learnings and integrate this with how we market food, especially to children and all around the world, not just in the United States, and see people demand healthier, more nutritious diets. I also think that could go the other way as well, and firms certainly have experience building business models and making a lot of money not pursuing that course of action. Some of the policy decisions we make on a global scale will, I think, affect what large-scale child nutrition looks like 20 years from now, and we've got to make the right decisions now.

**SECRETARY VILSACK:** Kellee?

**MS. JAMES:** I think everyone's covered it all, but I will add to a the big picture view for 20, 30, 40 years, regarding climate change and what is happening. If we could solve the climate change problem, we still have the opportunity to address biodiversity. How is the land use going to change with the increasing food production that we know is going to need to happen in order to feed a growing population? I've been in many conversations with USDA soil scientists regarding soil health. They're worried about continuing to build and protect healthy soil. If you consider, for example, water use, right here in the D.C. area, we have an unfolding case study of the Chesapeake Bay, which supports fisheries. We've got a large farming community as well, and the two don't always see eye to eye in terms of how we should address pollution issues. I think those are big-picture challenges that will, I hope, when we all come back here 30 years from now, have worked towards resolving some of these challenges.

There was an article in *Wired* magazine about a year ago, and the title was "Big, Smart, and Green." That is another optimistic trend that I see. Sometimes you get into conversations about organic versus conventional production or non-GMO versus genetic engineering, and I want to make a prediction that some of that tension will go away, because they're not necessarily always at odds.

This article used the case of integrative pest management for example, to show some of the best practices from varying types of agricultural production, how they can be pulled together and produce something really innovative, and so it's an example of a real breakthrough.

**SECRETARY VILSACK:** All right, to the panel, you're sitting around a coffee table in the middle of farm country. Pick a region of the country that you're most familiar with for this vision. There is a farmer and spouse, she might be in her mid 50s. They have a couple of kids who have since left the farm, and you're there at their table providing advice and counsel. What do you tell them? What do you tell them in terms of what they ought to think about, what they ought to do, what they ought to change, what they ought got to keep? Paul, take that.

**MR. SCHICKLER:** The first thing that I would recommend that they do is have a discussion about the future. The situation you're describing is one of the greatest challenges that rural America is going to face in the next decade, and that is the asset transfer that's going to occur. The first thing that they need to do is have that discussion about what their plans are, and include all the family members in that. Now even with the children off the farm, there is a tremendous opportunity to engage them in food for agriculture. They don't need to be on the farm, running the farm. But there is going to be a tremendous opportunity to bring them back and have them contribute to agriculture and food production, and that's what I would challenge the younger generation to get engaged in. So the older generation should have that discussion about asset transfer; the younger generation should be engaged in the opportunities that exist.

**SECRETARY VILSACK:** Kellee, are you going to tell him to transfer their entire operation organic?

**MS. JAMES:** That's right. Go organic. If the Farm Bill passes now, support for that... First of all, I would do a lot of listening, because as I've talked to farm families or county elevator operators, there's a lot of local knowledge and appropriate technology. There's a knowledge base there that needs to be tapped into .... the farm of the future where you can derive revenue from value-added processing activities or specialized identity-preserved crops or environmental credits.

USDA has been working a lot on Sage grouse and how you can use market mechanisms to protect biodiversity and build ecosystem health. That's a service that the rest of us can benefit from, that we're not paying for. Thanks to the American farmer, we're getting some of that free of charge. Maybe there's a way to capture that and put a value on it and make sure that the true cost or the true value of what's happening at the farm level is reflected in the larger economic sector.

**SECRETARY VILSACK:** Cathy?

**MS. BURNS:** I hope we're having fruit with our coffee around the table. Seriously, I think one thing I would make sure they knew is that they're not in this alone. This is an industry conversation, it's not just particularly the conversation that's happening around that particular coffee table. We have resources to provide them to help with that conversation.

I mentioned earlier the PMA Foundation, and the whole plight of that foundation is to attract, retain, and develop people in this industry. It's very important to us to train and develop that next generation, and so we have programs and support to help families with succession planning or young people coming out of college that might have interest in pursuing this career. It's our job to make it more glamorous than it appears at first blush. It is very dynamic.

You can do things with big data, you can be on the farm, you can deal with logistics and transportation. You can sell. There's so many facets of the industry that I think we need to do a better job marketing ourselves in that regard. There's a lot of support out there for the children leaving home, there's nothing wrong with people going out and getting a different experience; they'll be able to contribute that much more if and when they come back to run the farms.

**DR. SHAH:** One thing I've always been amazed by from spending time on farms, especially in America, is how wired and plugged in people are; farmers in particular are attuned to global markets. I love sitting in Fort Benton, Montana, and hearing about what's going on in Russia and how that affects predictions on pricing. I wish more young people in particular could see the level of global economic sophistication, technology, and market potential that exists in the sector, and, therefore, see it as a dynamic sector that they want to be a part of, where they can be productive, and also achieve some great human outcomes. This has always impressed me.

I want to make sure folks understand that this is a globally integrated market. If you're a producer, you need to be aware of this along with the tools that are at your disposal to stay connected, because this is only going to continue to increase.

**SECRETARY VILSACK:** So I'm going to give you a choice the last five minutes of this segment, and then we're going to turn it over to the audience for questions. You can choose to either be visiting with a Land Grant university president or with the Secretary of Agriculture. What advice would you provide to either one of those individuals? What concerns would you express? What would you ask them to do differently than they're doing today?

**MS. JAMES:** Can I go first? I'll limit my remark, because the problem or challenge is this: There's so much to be done, that focusing on a few things that can provide the most value is a difficult. Taking a big picture perspective helps to make sure that we have that consumer choice. This starts at the policy level. Coexistence is important as is support for the sector so that people can use economics that will help make, hopefully, rational decisions. I think that would be one sort of thing to ask for. The other thing is, markets like standards, so USDA and the U.S. Government the neutral arbiter of a standard that people can respond to --- this is a helpful thing. Finally, I think that in the name of creativity --- throwing down the gauntlet on some of these challenges, whether it's innovation challenges or competitive grants, people will

respond. The private sector is really good at responding when they have some sort of clear signals. So those would be the three things I would do.

**SECRETARY VILSACK:** Paul?

**MR. SCHICKLER:** I want to talk to both the Secretary, as well as President of the Land Grant institution, because the challenge, I think, is the same, and that is to work together, but work together large and seriously. The examples that I cited earlier, whether it was Indonesia, sorghum in Africa, or data in the United States, are all about collaboration. That is occurring. One of the things, as we've identified these challenges and go after the demands of more and better food, sustainability and rural development, is awareness and dialogue are increasing. That's good. Aid is coming but how do we develop it? Aid is part of the solution, but development is more. Modernization of aid is becoming more and more understood as part of an opportunity. Climate change, how do we adapt agriculture to climate change and rural development? All those dialogues are good. The awareness is increasing, but my request of you and the Land Grant Institute would be to increase the level, the seriousness, the intensity, and the scale of our collaborations, because we've got to do this together to solve and address those challenges.

**MS. BURNS:** I would ask you to continue to build on and drive programs around nutrition and consumption, for things like My Plate and nutritious school lunches. It all starts with the really, really young individuals. Through those school years they're so impressionable. To the extent that we can collaborate on programs like that and really drive them, scale them across the world, certainly in the U.S., but ultimately across the world, I think the results can be huge. The other thing, for both of you, would be to continue to make decisions based on data and leveraged research. We're blessed today be able to fund the Center for Produce Safety out in California, which since its inception in 2008, has developed and released 85 research papers with the intention of removing barriers for production. For small farmers, I would encourage folks to leverage that data --- anything from how to properly wash products to preventing contamination --- and what are those key critical variables that you need to pay attention to. I would emphasize the opportunity to use that data and research and to leverage it and scale it across the U.S.; to fully leverage those insights.

**DR. SHAH:** I would gather the all-powerful agricultural Secretary, together with the President of the lame brain universities: maybe I'd throw in the director of OMB and a few folks from Congressional committees, and I would just make the point that when President Lincoln created the Land Grant University system, it was a massive investment in American science and technology to transform food production in this country that paid off over 150 years. The scale of that investment was tremendous relative to other things we did in science and technology at the time. Today -- I know Cathy Woteki is here and would probably agree with this -- USDA runs world-class science programs, and the land grants do amazing work, but the scale of that investment relative to the opportunity to end hunger around the world, address climate change, and maintain American competitiveness is very, very small relative to, say, the 26, 27 billion a year we invest in the NIH every year.

So the one big transformational opportunity, in my view, would be a rebalancing of America's investment in core agricultural science to tackle all of these challenges, to bring in a generation of young people who want to be scientists and want to be on the cutting edge of what technology has to offer, and to get a broader range of institutions really pulling against that goal, but with real resources and focus.

**SECRETARY VILSACK:** Okay, we've got about 20 minutes left in this program, based on the clock that's in front of me. We've got roving mikes, and we need a few brave souls to ask a question or two, and then we'll take off from there. I would invite the young folks who are here if they have a question, we'd like to start with you. Yes, sir, you raised your hand. Let's see if we can get you a mike.

**MALE SPEAKER:** Where do you see -- you were talking about the five years. Where do you see agricultural research in five years?

**SECRETARY VILSACK:** I'd be happy to answer that question, but I want to give the panel an opportunity. Paul, you've got a significant research component in your world, talk about what Dupont Pioneer is doing. Cathy, you can certainly tell us what's happening in the produce area. Kellee, I'm sure you're aware of what may be taking place organically. Raj, You can talk a little bit about the international. Paul?

**MR. SCHICKLER:** You're right, we spent about \$2 billion across all of Dupont in research, and about two-thirds of that is in the agriculture and nutrition space, so it is core to our business. But what I would really speak to is a specific example. Ethiopia I think is one of the prime examples of success. The government is committing to agriculture, a lot of it in the extension and education areas. Dupont is a proud sponsor of the food security index. Ethiopia moved up 12 spaces in their ranking across all countries in the world in food security, and a lot of that was due to the government's commitment to agriculture and food and their investment into the extension education.

**SECRETARY VILSACK:** Cathy?

**MS. BURNS:** I'll revert back to the Center for Produce Safety out in California and the work that has been done there, more on what I would call a five-year short-term basis to try to remove those barrier that ultimately get in the way of either a farmer being profitable and sustainable over time, or removing the barriers to ultimately drive consumption. I wish I had time to share all 86 projects with you, because there's some really rich data there. And we'll continue to do that. Whatever is on your mind, the opportunity for us to do some research with real data that will ultimately provide insights that are actionable and then are implemented at the farm level, I think, are critical, and that, I think, we'll continue to see excellerate over time.

**SECRETARY VILSACK:** Raj?

**DR. SHAH:** I think there are a handful of specific crops that, over the next few years, will be much more widespread and available to many of the world's most vulnerable people and will change the face of the poverty they experience. Drought-tolerate maize for Africa is one of

them, particularly in East Africa; stress tolerant and flood tolerant rices in parts of Asia; places like Bangladesh where there's quite a lot of flooding risk, and some of the improved bio-fortified crops like the fortified sorghum, but also the orange flesh sweet potato and a number of others that are a much more stable vitamin A source for children. Those types of foods will be much more accessible. And they've been in development, by the way, for 15 years; we're beginning to see them already get out and get used.

**MS. JAMES:** I'll just say a word on organic, and, again, the seed breeding techniques. We don't have time to get into this on this panel, but we can expect aquaculture and hard to find sources of animal protein to feed. It's not necessarily the most sustainable thing, and so interesting research on developing, for example, soybean varieties can go into feed for aquaculture. There are a lot more exciting innovations happening in that realm.

**SECRETARY VILSACK:** One of the challenges of being the secretary of agriculture is that the mission area of USDA is so broad, and we do so much that sometimes it appears as if we're not doing very much because we have a hard time educating folks about what we're doing. But in the research area, you might find it surprising that we have nearly a hundred internal research centers; the folks in our ARS facilities do amazing work in a wide variety of issues. They can be looking at nutrition. They can be looking at food safety. They can be looking at seed technology. They can be looking at ways in which foods can be preserved more effectively. They can look at increasing efficiency in terms of biofuel feed stocks. They can look at better crop protection or production. The same is true with livestock. Those folks were responsible in the last five years for over 340 patent applications, new ideas and new thoughts and new business opportunities can be created from those new ideas.

At the same time, we also have an external research effort, which Raj, before he got the USAID job, was in charge, and now Cathy is in charge of our National Institute of Food and Agriculture. NIFA basically spends a substantial amount of money, hundreds of millions of dollars every year, in competitive grants to spur and leverage innovation in a couple of key areas where we're focusing.

We're going to have an additional tool as a result of passage of this Farm Bill. We advocated strongly within this administration for precisely what these folks have suggested, which is that we need to scale up our research effort. In order to do that, we need to challenge the private sector to partner with us. We are now able, as a result of the Farm Bill, to establish a research foundation. Congress provided us \$200 million. It's not, in the scheme of things, an enormous sum of money, but it's \$200 million more than we had a year ago. And that has to be matched. So this is now a pool of \$400 million. I think if we manage this pool and this foundation properly, it will provide us with the ability to make the case for additional investments over the course of the life of this Farm Bill.

At the same time that's happening, even with tight budgets, our Department is operating with a budget that's about a billion dollars less than it was when I became Secretary. We still managed to, in the last couple of years, to increase, by small amounts but still significant, increase money in that external research effort. So there is a significant commitment to research. But there has been a change over the course of the last 25 to 30, 40, 50 years, and that is that what used to be

primarily driven by the public sector, in terms of agriculture research, now it's fair to say it's more driven by the private sector, which has benefits. It also has some challenging things, which is that new ideas are not necessarily open to public until patents expire or licensing agreements are reached. There's a need for a balance. I think we in the public sector have realized what Raj is suggesting, that we need to scale up a bit.

Next question.

**FEMALE SPEAKER:** Yes, good morning. I'm from Washington State, and I work with a lot of new and beginning farmers, especially farm workers that have become farm owners. And two things are happening, as far as I'm concerned. One, there's the changing palate of the American consumer. Sometimes I don't think the market is changing with that palate. So what is being done about that? And how are you bringing this new taste into the increasing growth of that changing American consumer? Number two, what do you think can be done to increase the interest in the fact that there's so many farm workers becoming farm owners in the United States? I have someone here with me right now who came as a farm worker and now is a farm owner. So the programs that USDA has are very important, but how do we connect them to organizations like the ones you have? If we didn't have the 2501 we wouldn't have these farm workers who are now becoming farm owners. So what is being done by the industry?

**MS. BURNS:** I can start. I'll take the first one, and would love to talk to you offline on the second one. We obviously have huge opportunities for partnership and collaboration for new farmers or farmers that have been in business a long time, so we welcome that conversation. As it relates to the food palate changing, what we have found is there are some obviously sophisticated people that know what to do with those products, whether it's through cooking shows or consumer interest. The other thing that we're experiencing is even though the variety is changing and the palate may be changing, a lot of consumers don't know how to cook these foods and or how to use them in a way that puts a nutritious meal on the table. We think the next evolution, after we nail marketing, and marketing fruits and vegetables is more prevalent across the industry, the next order of business will be to really educate and train consumers on how to cook fruits and vegetables. I know that sounds really simple, but that's a huge barrier for consumption, especially on varieties. So we're excited about that next phase. Hopefully, we'll have partnerships to be able to help us do that.

**MR.SCHICKLER:** We are trying to be responsive to the changing palate. I mentioned the effort that we have in Africa around biofortified sorghum, but come back to the United States, and as the palate changes, one of the things that we've done is modified soybeans. What we can do with soybeans is zero trans fats; we can improve the oil profile so that it's much healthier, and, also from a taste standpoint and functionality, is more like olive oil. So we've made the products better from a nutritional standpoint, zero trans fat; and have improved the profile to be something that consumers already enjoy, olive oil; now they can get that same functionality through soybean oil.

**MS. JAMES:** What I think when I hear your question, is how does that information get back to the farm level? I mean consumers tastes may be changing, but the signal is getting scrambled somewhere in between. I immediately go back to market data like price and volume,

and, whether that can be communicated via demand signals through the supply chain. I think this helps with an efficient response; there are many mechanisms for that. We are one type of mechanism, but there are others, so that's how I think the two come together.

**SECRETARY VILSACK:** I just want to add one point about this discussion. In order for the market signal not to get scrambled and to be received appropriately, it has to be voiced in a way that is not seen as a criticism of what somebody has been doing for the last 10, 15, 20, 30, or 40 years. And all too often, how that message is received is not, hey, this happening, and you may want to adjust your operation to this new reality; it's what you're doing isn't right, and, not sustainable, and it's perceived as a criticism. In this country there has to be a much greater appreciation for producers generally and for those who feed us. Every single person in this audience who is not a farmer has the luxury not to be a farmer in this country. The reason we have that luxury is that we don't have to produce the food for our families. We don't have to grow it. We've transferred that responsibility to somebody else. And we're happy to do that because we have the most productive farmers in the world. But we don't appreciate that. We don't know and we don't appreciate the fact I could be a lawyer or some could be a doctor or some could run a seed company, or some could start an entrepreneur activity, because we don't actually have to spend the time and effort to raise the food, as our forefathers and foremothers used to do.

I think the dialogue and messages to be received appropriately, have got to be couched in a way so that it's not a criticism. To be presented basically as an educational opportunity. The one thing I want to note about this panel is if this panel had taken place five years ago or ten years ago or 20 years ago, you wouldn't see the diversity on this panel that you see today. You just wouldn't. And that's something that agriculture needs to understand and embrace; that diversity, whether it's in crop production and land use or in producers, is not a threat. It's something to be celebrated. It's something to be encouraged, especially if we're going to convince young people to get into this business. Our next panel will be talking more about your second question, which is, how do we help folks get into this business. If you don't mind, we'll wait and let them help answer that question.

**FEMALE SPEAKER:** You mentioned in your five-year prediction that you were trying to bring African and Asian cultures into the market more. My school -- I attend University of Maryland Eastern Shore, and my school is currently researching specialty or ethnic crops and how to produce those in our market. Is there any move towards that kind of on a bigger scale to bring those populations to try to get into the market more?

**SECRETARY VILSACK:** Raj, you want to take that.

**DR. SHAH:** I'll start first question. I'm glad you're doing that at your school. You know, one of the evolutions over the last decade or 15 years, in thinking about how to help countries that are largely still agrarian economies, where 60% of the population is still in food production, unlike here; right, is to recognize that this isn't really just about exporting our knowledge, know how, crops and technologies, but rather, listening, learning understanding what people's local food preferences are and breeding new crop technologies that have the traits that perform better in that local context. A lot of the best research partnerships, especially with USDA and

USAID and Dupont and research institutions in Africa or Asia are actually focused specifically on that. One of my favorite things about that is we've all worked together over a decade to create this orange flesh sweet potato, which is a biofortified product. I had this wonderful opportunity to be in northern Uganda with young kids, and they grow up eating a very dry white sweet potato, but this is a soft orange sweet potato. At first they were a little hesitant to try it for a variety of reasons. They literally will do tastings of seven; eight, nine different kinds of sub-varieties. Based on the responses, the local scientists are working with the local USDA partner, and probably some funding from USAID and others, being responsive to those kids in terms of whether they want more sweetness, softer foods, or whatever the traits are that they want. When it works, all of a sudden these things take off, and 100,000, 200,000, 500,000 young kids are now protected from vitamin A deficiency, don't get sick as often, and are protected from river blindness. The consequences are extraordinary. I think it's great that you guys are doing that at the University of Maryland. I think that's part of the solution going forward.

**MR. SCHICKLER:** We try to be responsive to these shifts as well. If you know our business, Dupont Pioneer in the United States, you know that clearly we develop and produce and sell corn and soybeans. To the Secretary's point, the U.S. is very efficient at producing those crops. But in a country like India -- and we operate in about 90 countries around the world -- in a country like India, we have to adapt to the local conditions. So we develop, produce, and sell corn, millet, mustard, sunflower, rice, wheat, because that's what Indian farmers and the Indian economy demand.

**SECRETARY VILSACK:** There are a couple things here. There is the ability to grow agriculture within these countries that are developing. And the theory behind that, of course, is that that will allow them to do a better job of feeding their own people and allow their people to move from 60% to 50% to 40% to less than one-tenth of 1%, which is where we are in the United States. That creates an economy that creates a demand for higher value products, much of which are produced in the United States, including agricultural products. So it creates export opportunities. It's important for us to know that evolution and to be able to continue to export our products from the United States to these countries in a way that is acceptable to them. You have to understand their concerns, you have to understand the barrier that is constructed to trade. Conversely, internally and domestically, we have an extraordinarily diverse population in the United States, and there are market opportunities to cater to specific ethnic tastes and needs. As we see restaurants and grocery stores begin to expand that opportunity, it gets to Cathy's point, I may want to try that. But, I'm a little bit concerned I don't know how to fix that. So if I get a recipe or I get something that's easy to understand, I'm going to try it, I'm going to embrace it. That could potentially create a domestic market for that very product being grown. So it's both ways. Cathy, you want to add a comment?

**MS. BURNS:** No, you said it perfectly. That was great.

**SECRETARY VILSACK:** Well I see by the clock that it's 10:00, and I want to keep this on schedule. Let's take a break for about 15 minutes. We're going to come back with a different panel on Beginning Farmers. Please join me in thanking our panel.